

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (original) A method for forming a capacitor element having a capacitor insulation film made of strontium titanate, comprising the steps of:

depositing a strontium titanate film; and
heat treating said strontium titanate film at a temperature between 500 degrees C and 650 degrees C in an inert gas ambient.

2. (original) The method according to claim 1, wherein said heat treating step crystallizes as-deposited said strontium titanate film which is an amorphous film.

3. (original) The method according to claim 1, wherein said inert gas includes at least one of argon, helium and nitrogen as a main component thereof.

4. (currently amended) The method according to claim 1, wherein said heat treating step includes rapid thermal annealing conducted in the inert gas ambient for a time interval between 15 seconds and five minutes.

5. (original) A method for forming a capacitor element in an LSI, comprising the steps of:

forming a bottom electrode overlying a semiconductor substrate;

depositing a strontium titanate film on said bottom electrode;

forming a top electrode on said strontium titanate film;
and

heat treating said strontium titanate film at a temperature between 500 degrees C and 650 degrees C in an inert gas ambient.

6. (original) The method according to claim 5, wherein said bottom electrode includes a plurality of layers including a silicon layer and/or titanium nitride layer.

7. (original) The method according to claim 5, wherein said heat treating step crystallizes as-deposited said strontium titanate film which is an amorphous film.

8. (original) The method according to claim 5, wherein said inert gas includes at least one of argon, helium and nitrogen as a main component thereof.

9. (currently amended) The method according to claim 5, wherein said heat treating step includes rapid thermal annealing conducted in the inert gas ambient for a time interval between 15 seconds and five minutes.

10. (currently amended) A method for forming a capacitor element having a capacitor insulation film made of strontium titanate, comprising the sequential steps of:

forming a barrier metal film over a semiconductor substrate;

forming a bottom electrode on the barrier metal film;

depositing ~~[[a]]~~ an amorphous strontium titanate film on the bottom electrode; and

performing crystallization of said amorphous strontium titanate film into a single-crystal strontium titanate film by ~~dry~~ heat-treating rapid thermal annealing said strontium titanate film at a temperature between 500 degrees C and 650 degrees C in an inert gas ambient.

11. (cancelled).

12. (previously presented) The method according to claim 10, wherein said inert gas includes at least one of argon, helium and nitrogen as a main component thereof.

13. (currently amended) The method according to claim 10, wherein said ~~heat treating step includes~~ rapid thermal annealing is conducted for a time period of one minute ~~interval between 15 seconds and five minutes.~~

14. (currently amended) A method of claim 10, comprising the further ~~[[steps]]~~ step of:

~~forming a bottom electrode overlying a semiconductor substrate;~~

~~depositing the strontium titanate film on said bottom electrode;~~

~~forming a top electrode on said strontium titanate film
; and performing the dry heat treating step by dry heat
treating said strontium titanate film at a temperature between 500
degrees C and 650 degrees C in an inert gas ambient.~~

15. (previously presented) The method according to claim 14, wherein said bottom electrode includes a plurality of layers including a silicon layer and/or titanium nitride layer.

16. (cancelled).

17. (previously presented) The method according to claim 14, wherein said inert gas includes at least one of argon, helium and nitrogen as a main component thereof.

18. (currently amended) The method according to claim 14, wherein said ~~heat treating step includes~~ rapid thermal annealing is conducted for a time interval between 15 seconds and five minutes.

19. (new) The method according to claim 18, wherein said rapid thermal annealing is conducted for a time period of one minute.

20. (new) The method according to claim 10, wherein the bottom electrode is a polycrystalline ruthenium bottom electrode.

21. (new) The method according to claim 1, wherein said heat treating step includes rapid thermal annealing, at the temperature between 500 degrees C and 650 degrees C in the inert gas ambient, conducted for a time period of one minute.

22. (new) The method according to claim 5, wherein said heat treating step includes rapid thermal annealing, at the temperature between 500 degrees C and 650 degrees C in the inert gas ambient, conducted for a time period of one minute.